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ABSTRACT

This paper is designed to provide basic information for writing behavioral objectives for teaching and testing instructional objectives in the psychomotor, affective, and cognitive domains. Procedures stress the stating of performance objectives as learning outcomes in terms of specific learner behavior. The paper discusses: (1) desired outcomes from studying the contents, stated in terms of behavioral objectives; (2) the need for establishing educational goals before writing objectives; (3) the rationale behind writing objectives; (4) the three domains for which goals need to be written; (5) intended outcomes from an instructional sequence, and strategies for realizing them; (6) format for writing objectives (audience--behavior--conditions--degree); (7) examples of psychomotor, affective, and cognitive objectives; (8) major categories within the three domains, according to Bloom and Krathwohl's taxonomies; and (9) methods for developing planning charts presenting objectives, activities, and evaluation strategies. Appendices include: (1) detailed lists of illustrative verbs for stating general instructional objectives in specific learning outcomes in fourteen subject areas; (2) elements of daily lesson plans; (3) a guide for evaluating lesson plans; (4) elements to consider when developing a unit plan; (5) a short bibliography on sources of objectives; and (6) a general bibliography. (MJB)

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DETERMINING GOALS, OBJECTIVES, AND STRATEGIES FOR THE DOMAINS OF LEARNING AND INSTRUCTIONAL INTENTS

A Guide to Lesson and Unit Planning

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I. INTRODUCTION

This paper is intended to provide a few basic points relative to writing meaningful behavioral objectives for teaching and testing, appropriate for the instructional intents in each of the three domains of learning. The procedure stresses the stating of performance objectives as learning outcomes in terms of specific learner behavior, because it is believed that effective teaching and learning require a clear conception of the desired learning outcomes. If it is worth teaching, it is worth knowing if we have succeeded.

All instruction needs stated objectives. It does not matter whether the teaching takes place in a formal classroom setting or in an informal one, nor does it matter if the instructional level is pre-school or post-graduate. What is important is that all teachers and learners know where they are going.

The paper incorporates several activities and is accompanied by appendices, lesson plan and unit plan guides, and by a bibliography. In no way is it intended as an exhaustive report. However, it should provide the teacher and supervisor with a common point of reference in the objective-writing process.

II. OBJECTIVES OF THE PAPER

1. After studying this paper, and without aid of reference materials, the reader should be able to list the four components of a performance objective. Acceptable performance would be naming the situation, the audience, the behavioral term, and the acceptance level statement.

2. Given several objectives stated in performance and non-performance terms, the reader should be able to identify the performance objective. Acceptable level of performance would be selecting 90% correctly.

3. Given a performance objective, the reader should be able to identify the audience, the situation, the behavioral term, and the acceptable level of performance required. The acceptable level of performance would be correctly identifying the four components of the objective 90% of the time.

4. Given an objective stated in non-performance terms, the reader should be able to rewrite that objective in performance terms. Acceptable degree of performance would be writing an objective that has the four necessary components.

5. After reading this paper, the reader will be able to list and describe the major categories of the three domains of the educational taxonomy. Acceptable performance will be selecting and explaining 90% accurately.

6. Given the opportunity to select any topic s/he wishes, the reader should be able to write a performance objective for that topic and the desired instructional intent. Acceptable degree of performance would be an objective which contains all four components of the performance objective.

7. Given a study of this paper, the reader will be able to formulate a behavioral objective for each of the three domains. Acceptable performance will be writing one objective for each domain; it must contain all four parts of the instructional objective.

III. GOAL SETTING

The first step in our effort of writing instructional objectives is to state the general goals we wish to reach in our teaching. These will be at a level of generality, broad and comprehensive. Overall goals are important and useful, because they identify broad desired directions or intents; they generally focus on the teaching and learning processes or on the subject matter. Goals have their use in writing up the broad outcomes for a district, school, year or grade, program, course, or even a unit, where it would be unnecessary or unmanageable to write long lists of specific student behaviors or performance objectives. Having written overall goals, however, facilitates choosing of appropriate domains, as well as the writing of behavioral objectives.

E.g., overall goals may be stated as follows:

1. To teach the principles of electricity
2. Gains knowledge of algebraic formulas
3. Completes the reading materials of the grade level.

Note that these goals are all worthy of attainment, and it will be important that they be stated somewhere. The first one provides a general job description for the teacher and identifies the broad area of the curriculum for which he will be responsible. The second one emphasizes the learning process rather than the type of behavior which would evidence that learning has taken place; the third one specifies the materials to be covered.

Most school districts adopt a set of educational goals. Appropriate subgoals are extracted or developed from the goal structure of the district. Beyond that, specific objectives will have to be written

that will specify how the subgoals will be reached, and thus how the goals will be accomplished. Examples of the process:

District Goal: The school district should promote closer cooperation and communication between parents, teachers and students to bring about respect for common problems and interests.

Subgoal for 4th-grade Teacher: 4th-grade teachers will maintain regular communications with children's parents and with school and district personnel.

Objectives for Reaching the Subgoal: 4th-grade teachers will attend all scheduled PTA and faculty meetings, plan and officiate Open House, conduct two parent-student-teacher conferences (fall and spring), and complete grade and progress reports at specified or necessary intervals.

Subgoal for Elementary Principal: Elementary principals will carry out a program of community relations for the purpose of interpreting and furthering school programs and will serve as a district officer in maintaining intra-school communications.

Objective for Reaching the Subgoal: The principal and PTA will organize a Parent Advisory Committee which will meet with faculty representatives on a monthly basis for discussion of school and community relations and programs.

Prior to formulating an objective for a selected goal it is helpful to list goal indicators--occurrences or states of being that would be in effect should a goal have been met, facts or factors that will illustrate or amplify the goal statement.

Hierarchy of Goals/Objectives:

District Goals -- formal

District Objectives -- formal

Administrators' Goals -- informal

Administrators' Objectives -- formal

Classroom Teachers' Goals -- informal

Classroom Teachers' Objectives -- forma

IV. NEED FOR OBJECTIVES

An overall goal like "to appreciate good music" is very general, so general that it tells almost nothing. Instructional objectives are best written in terms of specific behaviors which learners will exhibit. A pupil must do something for us to know if instruction has been effective. Unless we describe what a student will be doing when demonstrating that s/he "appreciates," our description or observation of behavior will be meaningless.

An objective is a desired accomplishment which can be measured within a given time and which, if achieved, will advance the system toward a goal.

Teaching is a complicated task. Decisions must be made on an hourly, daily basis regarding what to teach, how to teach, and how to determine if learning has actually taken place. One sure way to make these judgments is to write objectives.

Objectives tend to keep the instructor and the learner on the track. Objectives make it possible to determine individual student progress at a specific point in the instruction. The intended behavior of the student is carefully defined, and the means to determine the accomplishment of this behavior is stated.

V. THE DOMAINS OF LEARNING

Generally discussions dealing with the writing of instructional objectives immediately plunge into the languaging of objectives. However, before one can make decisions about specific lesson objectives, one must first decide in which domain (or domains) of learning the lesson is going to be and be aware of the reasons for that choice. Each domain of learning has its own requirements and goals to meet the needs of the learner, and learning activities are designed and implemented to reach the goals identified.

Teachers, therefore, should first of all decide which domain(s) of learning the lesson is addressing. In doing this, they are identifying the specific need(s) of the learners which the lesson hopes to reach. Teachers should at this stage, of course, be aware of the nature of the diagnostic data which led to their needs identification and assessment, data gathered through pre-tests, observation of past performance, concept diagnosis, post-test situations, or a variety of other methods.

Benjamin Bloom's Taxonomy of Educational Objectives is one of the most helpful guides in identifying and defining instructional objectives. It is made up of a set of general and specific categories that encompasses all possible learning outcomes that might be expected from teaching. There are three domains of learning which make up the total learner in terms of his/her needs.

1. The psychomotor domain is the manipulative or motor-skill area. Objectives in this domain are concerned with how students move or control their bodies. This domain includes some learning outcomes that are common to most subjects--writing, speaking--but it gets major emphasis in subjects

like industrial education, art, music, drama, laboratory sciences, and physical education. Psychomotor skills play a prominent role in the instructional objectives in these areas.

2. The cognitive domain includes those objectives which deal with the recall or recognition of knowledge and the development of understanding and intellectual abilities and skills. This domain begins with simple knowledge outcomes and proceeds through increasingly complex levels of comprehension, application, analysis, synthesis and evaluation. The categories are sequential and cumulative; i.e., each category of thinking has unique elements but also includes some form of all lower categories. In fact, taxonomy comes from science and refers to this form of sequential and cumulative system of classification.

3. The affective domain deals with those objectives that are concerned with how a learner feels, and they describe changes in interest, attitudes, and values, and the development of appreciations and adequate adjustment. No longer should teachers assume that when cognitive objectives are developed there will be a corresponding development of appropriate affective behaviors.

VI. INSTRUCTIONAL INTENTS AND STRATEGIES

Once the domain(s) of learning of the lesson has been selected, teachers must identify the instructional intent. Lessons can generally be classified under one or more of the following four basic instructional intents:

1. Introductory or diagnostic: the intent is to introduce a new topic, set a new direction within the same topic, diagnose, motivate or stimulate interest, etc.

2. Research: the intent is to gather, select, categorize, record or display data, etc.

3. Developmental or reinforcement: the intent is to develop and share new understandings or insights, to formulate rules, to make connections, to reinforce understandings already developed, to establish relationships, or to solve problems, etc.

4. Evaluative or application: the intent is to measure what has been learned and to apply what has been acquired to a new situation.

The part of the performance objective which specifies the conditions essentially outlines the parameters of the instructional approach and identifies the basic kind of instruction or experience the learner will receive. Thus the procedural details of a lesson are actually extensions of the conditional statements of the performance objective.

In selecting the conditions under which the objective will be met, the teacher is concerned with organizational and strategical consideration. To a large degree, the parameters of these considerations are fairly well defined by the behavioral statements, since certain behaviors are more readily attained under certain conditions. For example, if a teacher

has a behavioral objective that the students "will share their ideas, sustain and extend their thoughts and interact with each others' ideas," this would probably be more effectively attained in a small group discussion, given at least twenty to thirty minutes.

Often the overall instructional approach of a lesson is thought of before or almost simultaneously with the instructional objectives; i.e., a teacher may think of a creative idea and then develop the objectives to fit the procedural plan. This is usually an outgrowth of our creative subconscious which is continually filtering assessing and processing information. Therefore it is not necessarily a sign of poor planning that a teacher may be able to verbalize an instructional approach more readily than the needs assessment and performance statements on which it is based.

Another focus a teacher can take in order to facilitate creating an instructional approach to a lesson would be to think of the particular instructional strategies and devices available to the teacher for implementing an instructional plan. Since the procedural plan basically spells out how the objectives will be implemented, it helps the teacher to think of the various vehicles available for putting a set of instructional intents into action.

A wide range of instructional strategies, methods, techniques, devices and resources is available to a teacher for implementing a given set of learning objectives. Some strategies lend themselves well to particular instructional intents, e.g., tests are better used in introductory or in evaluation/application type lessons than in those where the intent is research or development. However, a listing of some of the possibilities in each of the four instructional intents identified above will

immediately show the wide variety possible, but more importantly it will show that the same technique or strategy can be used in the different areas, so long as the instructional purpose is kept clearly in mind and the particular strategy is adapted to the intent at hand.

1. Introductory or diagnostic strategies: pre-tests, role-playing, resource people, lectures, field trips, films, filmstrips, stories, records, large group discussions, demonstrations, games, art activities, concept diagnosis (Taba I), class circles (Glasser), inquiry circles, textbook readings, etc.

2. Research strategies: library activities, textbooks, films, filmstrips, photography activities, collages, maps, demonstrations, dioramas, murals, plays, sketch books, diaries, scrap books, informational displays, data retrieval charts, discussions, bulletin boards, field trips, resource personnel, individual and small group research tasks, inquiries, etc.

3. Developmental or reinforcement strategies: experiments, lectures, demonstrations, small group discussions, inquiry circles, interpretation of data lessons (Taba II), dioramas, map projects, bulletin boards, plays, resource people, study trips, games, discussions, displays, films, records, filmstrips, etc.

4. Evaluative or application strategies: post-tests, role playing, projects (collages, murals, dioramas, bulletin boards, etc.), inquiry circles, application of data lessons (Taba III), plays, sketches, field trips, games, written projects, culminating activities, etc.

Many times teachers are not aware that certain strategies or ideas can be used in more than one mode or perspective. For example, role-playing can be used as a strategy in all four instructional intents by simply changing one's perspective. In an introductory lesson a role-playing

situation could be used to introduce a new topic or direction, whereas the same strategy could be used as a way of sharing information on which to develop a series of new insights and understandings, or as a technique for finding out what learners have gained. Field trips and films may well be used to acquaint students with a new topic, or they may be used for doing research, for reinforcement, or as a demonstration of application.

As teachers explore the many different strategies available, they begin to see how some offer a new and creative approach to an otherwise routine way of implementing a particular instructional intent. They also find that some of the activities they use with pupils are not used to their fullest or in the right way with respect to the overall instructional intent of the lesson.

VII. FORMULATING OBJECTIVES

A simplified A, B, C, D format may be applied to the objective-writing process.

A = Audience -- Who is to be doing the learning? Who are the students working on the objective?

B = Behavior -- A verb and object which describe an observable action the student will be doing as a result of the learning experience.

C = Conditions -- Limitations or restrictions placed on the student, or materials, or aids given the pupil when s/he is receiving instruction or when s/he is being evaluated to determine whether or not the objective has been attained.

D = Degree -- The acceptable performance level at which a student proves s/he has mastered the objective.

A for AUDIENCE

Every objective is intended for somebody -- the audience -- the student or students who will be doing the learning or working on the objective. The audience for many objectives is often a general statement such as

"the seventh-grade literature class at Podunk Junior High School."

But when we write a behaviorally-stated objective it doesn't help much to identify the audience as a "seventh-grade literature student." Does "seventh-grade literature student" mean all seventh-grade literature pupils will be able to complete the objective, even those seventh grade students who are doing fifth-grade work? A seventh grader who enjoys reading and reads at a tenth-grade level is not the same seventh grader who has trouble reading

a fifth grade story.

Depending on the kind of learning problem or objective you are working on, it may help to be very specific about the characteristics of the audience for whom the behavioral objective is intended. The detail of description may include several which describe the diagnostic cues or the testing indicators that will be used to select students who need to achieve this objective. This kind of detail may be very useful when dealing with individualized instruction or personalized instruction where all students are not expected to be working towards the same objectives. Audience detail is also desirable when teaching exceptional children who are either advanced, retarded or physically disadvantaged.

Since objectives are intended to define the behaviors that the learner will exhibit, it is important to remember that each learner is different and has different capabilities. By describing in greater detail the student for whom an objective is intended, you will be able to define more precisely the instructional design needed for that student to attain that objective.

B for BEHAVIOR

Verbs and objects combine to make clear statements or fuzzy statements about what the learner will be doing when s/he attains the objective. Clear statements are important. They are statements of intent which enable students, and other teachers, administrators or parents to know what is expected. They eliminate the game of trying to outguess the teacher or the con-game of bluffing it through.

Robert Mager (p. 11) uses the following two lists of words to contrast the types of words which are most appropriate to describe behavior:

Words open to many interpretations	Words open to fewer interpretations
to know	to write
to understand	to recite
to really understand	to identify*
to appreciate	to differentiate
to fully appreciate	to solve
to grasp significance of	to construct
to enjoy	to list
to believe	to compare
to have faith in	to contrast

*Acceptable only if used with other terms such as underlining, circling, etc.

The appendix includes an extensive list of illustrative verbs for stating general and specific learning outcomes.

C for CONDITIONS

Conditions which are stated in a behavioral objective are givens, limitations, materials or aids which are present or absent during the instruction or experience the students will receive and during the time that they are being evaluated to decide whether or not the objective has been achieved.

The purpose of behavioral objectives is not so much to focus our interests on what is observable as to render more observable that which is of interest. The degree to which we are successful in this will be determined largely by the care and ingenuity employed in describing the conditions of performance. It is here that we describe the setting for the evaluation, the materials and aids the students will be given, and the nature of the problem with which they will be confronted. The statement of condition also introduces the procedural details of the lesson. The difference between an ordinary and an excellent objective is frequently the amount of ingenuity used in describing the conditions of learning and evaluation.

D for DEGREE

It seldom happens that the behaviors described in an objective are completely mastered by all students. There are occasions when perfect mastery is required, and in those situations instruction should be continued until it is attained. More often, however, teachers are willing to tolerate a certain variability of performance and may be satisfied with reasonably high, but less than perfect degrees of attainment. The degree statement of the objective establishes the decision point where instruction is thought to have fulfilled its purpose and a new objective can be pursued.

Degree of acceptable performance may be stated like "90% identified correctly" or "completed 10 out of 15". Degree statements should reflect both the knowledge requirements of the subject matter and the emotional requirements of the pupil.

Statements of degree and of conditions are extremely important to the subsequent design and evaluation of the instructional materials and strategies. The evaluation of the instructional system depends in a large part on the skill and ingenuity applied in stating the conditions and criteria for evaluating each objective. The instructional system may require several tryouts to determine if degree statements are realistic and if the conditions of degree measurement are accurate indicators that the student has learned the knowledges, feelings or skills that the teacher would like to have learned.

In planning and teaching, then, the strategy is

1. to break a given concept down into a sequence of facts, ideas attitudes, interests or processes that must be understood before it is possible to comprehend the concept,

2. to diagnose where the learner is prior to the instruction,

3. to formulate realistic instructional objectives, in behavioral terms, for the appropriate learning domain, and instructional intent, and to determine appropriate strategies leading to the outcomes, and

4. to determine how to evaluate the pupil's performance in terms of the objectives.

VIII. SAMPLE OBJECTIVES IN THE DOMAINS

Sample Psychomotor Objectives

Using the correct hand position (condition), typing class students (audience) will type (behavior) the letters ASDF and JKL on a standard typewriter keyboard (conditions). The pupils will be ready to proceed to the next objective when they can type all or some of these letters in any specified order without errors at a minimum rate of three letters per second (degree).

> The task involves learning to operate a previously stationary object, the typewriter.
>
> The students initiate the task when they are ready. While a criterion limit is specified, the machine does not regulare the students; the learners do it, making this a self-paced task.

Early grade school children (audience) will hit (behavior) a softball with a bat (conditions). Acceptable performance is hitting one out of three slow-pitched softballs thrown in the strike zone (degree).

> The softball is in motion while the student is set, ready to hit at the critical moment; hence, this is a mixed-paced task.

High school football receivers (audience) will catch (behavior) an over-the-shoulder pass while running downfield (conditions). They will catch one out of two such passes when not closely defended (degree).

> The behavior requires the receivers to be running while a ball is moving toward them through the air. They must adjust their motion so they can meet the ball at the key moment without stopping, making this an externally-paced task.

Sample Cognitive Objectives

The 7th-grade student (audience) will name (behavior) the lines and spaces of the treble staff in musical notation when notes are presented in

any order (conditions). Satisfactory performance is the ability to name a note in two seconds or less (degree).

The behavior requires the student to recall what s/he has learned and to name a set of symbols.

Note that the symbols are identical or almost so from one instance to the next. S/he must learn at some point, however, that different kinds of notes (quarter, half, etc.) change only their duration, not their name.

Given the name of an event which helped lead to the start of the Civil War (conditions), the eighth-grade student (audience) will recognize and explain the significant facts associated with that event (behavior). Acceptable performance is remembering 75% of the significant facts and explaining them successfully to 90% of the class (degree).

This objective requires the student to remember specific facts. S/he must also be able to explain their significance, which takes comprehension.

The objective also requires the student to remember the sequence of the event. It also takes for granted that s/he can either speak or write.

Physics students (audience) will use Ohm's law to determine either the voltage, current, or resistance (behavior) in a DC circuit when given two of the values (conditions). Both the answer and sequence used in solving the problem must be correct (degree).

This is a complex objective requiring several rules. The outcome is a solution which can be judged right or wrong. The pupil is functioning at the application level.

The rules involved include: arithmetic operations Ohm's law: voltage = current x resistance.

Sample Affective Objectives

Junior High School Algebra students (audience) will become more motivated to work algebra problems. They will show this increased motivation by completing (behavior) more of the "fun options" suggested

at the end of each unit. These options consist of games and puzzles using the principles taught in the unit. Students are not assigned these options, but they can find out how well they did by requesting to see the teacher's answer key (conditions). If the average number of pupils working the fun options reaches 50%, the objective will be considered accomplished (degree).

Persistence by voluntarily engaging in more problem solving is used to infer increased motivation.	When fun options are assigned, they should not be counted toward the criterion or in determining base line data.

Sixth-grade students (audience) will come to value an unpolluted environment. Their concern for pollution will be measured by the way they discard papers, wrappers, etc. (Behavior). On an outing where they are given individually wrapped candy and do not know that their paper-discard behavior is being observed (conditions), the number of wrappers thrown on the ground will be significantly less than during a baseline outing (degree).

Paper discard behavior provides a good measure of attitude toward the environment and pollution.	The degree is an average for a group. Individual behavior is more difficult to observe.	If someone in authority says, "Remember to put papers in the trash," your measure will be somewhat biased.

IX. MAJOR CATEGORIES IN THE DOMAINS

Major Categories in the Psychomotor Domain

Merrill and Goodman have simplified Bloom's taxonomy of psychomotor objectives into three strategies:

1. Self-paced strategy. If, prior to initiating a given body movement, both the person and the object to be manipulated are at rest so that the learner can respond when ready, then a self-paced psychomotor strategy is appropriate. An objective requires this strategy if the pupil is asked to:

-move the body or part of the body when ready and at own speed.

-contact, manipulate, control, or move a stationary object.

2. Mixed-paced strategy. If, prior to initiating a given body movement, either the body or the object to be manipulated are already in motion, then a mixed-paced psychomotor strategy is appropriate. The objective requires this strategy if the learner is asked to:

-interact with a stationary object while the student's body is in motion.

-interact with a moving object while the body is set or in a state of preparation.

3. Externally-paced strategy. If, prior to initiating a given body movement, both the body and the object to be manipulated are in motion, then an externally-paced strategy is appropriate. An objective requires this strategy if the student is asked to:

-execute a response or series of movements while s/he and an object both are in motion.

A sample list of instructional objectives and behavioral terms to illustrate the diverse outcomes represented by the psychomotor domain is given below.

Sample General Instructional Objectives and Behavioral Terms for the Psychomotor Domain of the Taxonomy

Writes smoothly and legibly
Draws accurate reproduction of a map, picture, specimen
Sets up lab equipment quickly and correctly
Types with speed and accuracy
Operates sewing machine skillfully
Operates skill saw safely with skill
Performs skillfully on the cello
Performs a dance step correctly
Demonstrates correct form in swimming
Demonstrates skill in driving a car
Repairs electric motor effectively
Creates new ways of performing, e.g., creative dance, sports, music.

Assembles, builds, calibrates, changes, cleans, composes, connects, constructs, creates, designs, dismantles, drills, fixes, follows, grips, hammers, heats, hooks, makes, manipulates, mends, mixes, nails, navigates paints, runs, sands, sharpens, sets, sketches, stirs, uses, weighs, wraps.

The following charts indicate the major categories in the cognitive and affective domains of Bloom's and Krathwohl's taxonomies of educational objectives. They are taken from Gronlund's pamphlet. Accompanying the descriptions of the categories are illustrative general objectives and sample behavioral terms, intended to be merely suggestive of the wide range of possibilities.

Major Categories in the Cognitive Domain of the Taxonomy of Educational Objectives (Bloom, 1956)

Descriptions of the Major Categories in the Cognitive Domain
1. Knowledge is defined as the remembering of previously learned material. This may involve the recall of a wide range of material, from specific facts to complete theories, but all that is required is the bringing to mind of the appropriate information. Knowledge represents the lowest level of learning outcomes in the cognitive domain.
2. Comprehension is defined as the ability to grasp the meaning of material. This may be shown by translating material from one form to another (words to numbers), by interpreting material (explaining or summarizing), and by estimating future trends (predicting consequences or effects). These learning outcomes go one step beyond the simple remembering of material, and represent the lowest level of understanding.
3. Application refers to the ability to use learned material in new and concrete situations. This may include the application of such things as rules, methods, concepts, principles, laws and theories. Learning outcomes in this area require a higher level of understanding than those under comprehension.
4. Analysis refers to the ability to break down material into its component parts so that its organizational structure may be understood. This may include the identification of the parts, analysis of the relationships between parts, and recognition of the organizational principles involved. Learning outcomes here represent a higher intellectual level than comprehension and application because they require an understanding of both the content and the structural form of the material.
5. Synthesis refers to the ability to put parts together to form a new whole. This may involve the production of a unique communication (theme or speech), a plan of operations (research proposal), or a set of abstract relations (scheme for classifying information). Learning outcomes in this area stress creative behaviors, with major emphasis on the formulation of new patterns or structures.
6. Evaluation is concerned with the ability to judge the value of material (statement, novel, poem, research report) for a given purpose. The judgments are to be based on definite criteria. These may be internal criteria (organization) or external criteria (relevance to the purpose) and the student may determine the criteria or be given them. Learning outcomes in this area are highest in the cognitive hierarchy because they contain elements of all of the other categories, plus conscious value judgments based on clearly defined criteria.

Examples of General Instructional Objectives and Behavioral Terms for the Cognitive Domain of the Taxonomy

Illustrative General Instructional Objectives	Illustrative Behavorial Terms for Stating Specific Learning Outcomes
Knows common terms Knows specific facts Knows methods and procedures Knows basic concepts Knows principles	Defines, describes, identifies, labels, lists, matches, names, outlines, reproduces, selects, states
Understands facts and principles Interprets verbal material Interprets charts and graphs Translates verbal material to mathematical formulas Estimates future consequences implied in data Justifies methods and procedures	Converts, defends, distinguishes, estimates, explains, extends, generalizes, gives examples, infers, paraphrases, predicts, rewrites, summarizes
Applies concepts and principles to new situations Applies laws and theories to practical situations Solves mathematical problems Constructs charts and graphs Demonstrates correct usage of a method or procedure	Changes, computes, demonstrates, discovers, manipulates, modifies, operates, predicts, prepares, produces, relates, shows, solves, uses
Recognizes unstated assumptions Recognizes logical fallicies in reasoning Distinguishes between facts and inferences Evaluates the relevancy of data Analyzes the organizational structure of a work (art, music, writing)	Breaks down, diagrams, differentiates, discriminates, distinguishes, identifies, illustrates, infers, outlines, points out, relates, selects, separates, sub-divides.
Writes a well organized theme Gives a well organized speech Writes a creative short story (or poem, or music) Proposes a plan for an experiment Integrates learning from different areas into a plan for solving a problem Formulates a new scheme for classifying objects (or events, or ideas)	Categorizes, combines, compiles, composes, creates, devises, designs, explains, generates, modifies, organizes, plans, rearranges, reconstructs, relates, reorganizes, revises, rewrites, summarizes, tells, writes

Judges the logical consistency of written material	Appraises, compares, concludes, contrasts, critizes, describes, discriminates, explains, justifies, interprets, relates, summarizes, supports
Judges the adequacy with which conclusions are supported by data	
Judges the value of a work (art, music, writing) by use of internal criteria	
Judges the value of a work (art, music, writing) by use of external standards of excellence.	

Major Categories in the Affective Domain of the Taxonomy of Educational Objectives (Krathwohl, 1964)

Descriptions of the Major Categories in the Affective Domain
1. Receiving refers to the student's willingness to attend to particular phenomena or stimuli (classroom activities, textbook, music, etc.). From a teaching standpoint, it is concerned with getting, holding, and directing the student's attention. Learning outcomes in this area range from the simple awareness that a thing exists to selective attention on the part of the learner. Receiving represents the lowest level of learning outcomes in the affective domain.
2. Responding refers to active participation on the part of the student. At this level s/he not only attends to a particular phenomenon but also reacts to it in some way. Learning outcomes in this area may emphasize acquiescence in responding (reads assigned material), willingness to respond (voluntarily reads beyond assignment), or satisfaction in responding (reads for pleasure or enjoyment). The higher levels of this category include those instructional objectives that are commonly classified under "interests"; that is, those that stress the seeking out and enjoyment of particular activities.
3. Valuing is concerned with the worth or value a student attaches to a particular object, phenomenon, or behavior. This ranges in degree from the more simple acceptance of a value (desires to improve group skills) to the more complex level of commitment (assumes responsibility for the effective functioning of the group). Valuing is based on the internalization of a set of specified values, but clues to these values are expressed in the student's overt behavior. Learning outcomes in this area are concerned with behavior that is consistent and stable enough to make the value clearly identifiable. Instructional objectives that are commonly classified under "attitudes" and "appreciation" would fall into this category.
4. Organization is concerned with bringing together different values, resolving conflicts between them, and beginning the building of an internally consistent value system. Thus the emphasis is on comparing, relating, and synthesizing values. Learning outcomes may be concerned with the conceptualization of a value (recognizes the responsibility of each individual for improving human relations) or with the organization of a value system (develops a vocational plan that satisfies his need for both economic security and social service). Instructional objectives relating to the development of a philosophy of life would fall into this category.

5. Characterization by a Value or Value Complex. At this level of the affective domain, the individual has a value system that has controlled his behavior for a sufficiently long time for him to have developed a characteristic "life style." Thus the behavior is pervasive, consistent, and predictable. Learning outcomes at this level cover a broad range of activities, but the major emphasis is on the fact that the behavior is typical or characteristic of the student. Instructional objectives that are concerned with the student's general patterns of adjustment (personal, social, emotional) would be appropriate here.

Examples of General Instructional Objectives and Behavioral Terms for the Affective Domain of the Taxonomy

Illustrative General Instructional Objectives	Illustrative Behavioral Terms for Stating Specific Learning Outcomes
Listens attentively Shows awareness of the importance of learning Shows sensitivity to human needs and social problems Accepts differences of race and culture Attends closely to the classroom activities	Asks, chooses, describes, follows, gives, holds, identifies, locates, names, points to, selects, sits erect, replies, uses
Completes assigned homework Obeys school rules Participates in class discussion Completes laboratory work Volunteers for special tasks Shows interest in subject Enjoys helping others	Answers, assists, complies, conforms, discusses, greets, helps, labels, performs, practices, presents, reads, recites, reports, selects, tells, writes
Demonstrates belief in the democratic process Appreciates good literature (art or music) Appreciates the role of science (or other subjects) in everyday life Shows concern for the welfare of others Demonstrates problem-solving attitude Demonstrates commitment to social improvement	Completes, describes, differentiates, explains, follows, forms, initiates, invites, joins, justifies, proposes, reads, reports, selects, shares, studies, works
Recognizes the need for balance between freedom and responsibility in a democracy Recognizes the role of systematic planning in solving problems Accepts responsibility for his own behavior Understands and accepts his own strengths and limitations Formulates a life plan in harmony with his abilities, interests, and beliefs	Adheres, alters, arranges, combines, compares, completes, defends, explains, generalizes, identifies, integrates, modifies, orders, organizes, prepares, relates, synthesizes

Displays safety consciousness Demonstrates self-reliance in working independently Practices cooperation in group activities Uses objective approach in problem solving Demonstrates industry, punctuality and self-discipline Maintains good health habits	Acts, discriminates, displays, influences, listens, modifies, performs, practices, proposes, qualifies, questions, revises, services, solves, uses, verifies

These examples should help to clarify the meaning of each category and suggest types of learning outcomes when writing instructional objectives. The general instructional objectives and behavioral terms are not exhaustive and are only meant to serve as guides. It should also be noted that the same behavioral term may be appropriately used at several different levels. On the other hand, there are some terms which are more directly relevant to one taxonomy category than to another.

Overlapping of Domains

Instructional objectives in the psychomotor domain typically include concomitant cognitive and affective elements, but the demonstration of a motor skill is the dominant characteristic of the learner's response. The same kind of overlapping of behavior occurs in the other domains. Learning outcomes in the cognitive domain have some affective properties, and objectives in the affective area have some cognitive elements.

Some objectives may include components of all three domains. Such objectives should not be thrown out simply because they are difficult to clarify. If they can be classified by rewriting, their usefulness may increase. But if revision of the objectives distorts rather than clarifies their instructional intent, the original statement should be kept. The taxonomy should only be a guide, not a master.

The three domains of the taxonomy are a useful classification system; they indicate particular emphases in writing objectives, but they are not mutually exclusive divisions. They assist the teacher in the following five ways:

1. Identifying objectives for a particular instructional unit.

2. stating objectives at the proper level of generality,

3. defining objectives in the most relevant behavioral terms,

4. checking on the comprehensiveness of a list of objectives, and

5. communicating with others concerning the nature and level of learning outcomes included in a list of objectives.

X. WRITING SPECIFIC PLANNING CHARTS

Writing instructional strategy involves making specific decisions as to the type of procedure appropriate for a given strategy and the specific content of the subject to be covered. When planning an instructional strategy, it is usually best to plan the evaluation prior to determining the specific activities.

Evaluation: Because an objective deals with terminal behavior, it is desirable to determine the testing procedure prior to designing the instructional procedures even though this is the last step in instruction. The evaluation strategy prescription describes the format for the test, the way the test will be administered and scored, and any special procedures which should be used.

Program Activities: The first steps in any learning sequence are to apprise the student of our expectations, define the nature of the task, and explain why s/he should learn it. The activities should describe the drills, exercises, and problems necessary to assist the student in acquiring the specified behavior.

Planning Charts: In planning, of course, the objectives should be identified before final instructional plans are made. The objectives should determine the activities which will accompany the plan and will also dictate the procedures for evaluating learner progress. One way to ensure that objectives, activities, and the evaluation strategies will be in harmony is to prepare a planning chart that includes all three and that makes clear the relationship between the three and prevents instruction from becoming subdivided into a series of separate teaching acts.

PLANNING CHART

Specific Objectives	Specific Activities	Evaluation Strategies
A = Audience -- 3rd-grade students B = Behavior -- Will write the letters d, b, g, and p using cursive-style handwriting. C = Conditions -- Using pencil and lined paper, when directed. D = Degree -- Each letter will be well formed, and created with a single smooth stroke. Domain = Psychomotor Strategy = Self-paced Instructional Intent = Introductory	1. Show examples of correctly formed letters 2. Demonstrate correct form to small groups 3. Present checklist and examples of poorly formed letters. 4. Review correct way to hold pencil. 5. Display sheets where individual letters appear as dotted forms. Connect dots using even strokes. 6. Show filmstrip from county office on correct letter formation. 7. Help individual children as necessary.	1. Directions: In cursive, write the following letter combinations on lined paper: db, gd, pg, dp, dpg, bdg, ppg, dbg. 2. Checklist: Rate form on each letter 1-5 on each of the following: incomplete lines, proper placement in lines, well-formed tail, etc. 3. Watch each pupil write two or more letter groups. Rate writer's form 1-5 on each of the following: holding pencil correctly, smooth stroke. 4. Keep record on each student's score; repeat in 6 weeks 5. Criteria: A good (or 3) rating is acceptable.

PLANNING CHART

Specific Objectives	Specific Activities	Evaluation Strategies
Audience = 8th-grade students Behavior = Will recognize and explain significant facts associated with each event in a series of episodes which helped lead to start of the Civil War. Conditions = When given the name of that event. Degree = Acceptable performance is remembering 75% of the significant facts and explaining them successfully to 90% of the class. Domain == Cognitive Strategy -- Event-naming, recall, and comprehension. Instructional Intent = Reinforcement	1. Introduce film or filmstrip on Civil War 2. Develop time line on board or overhead. 3. Read about events preceding the war in text. 4. Students produce "you-are-there" type program. 5. Stress importance of knowing events as a means of understanding current events. 6. One by one, describe or portray each event. 7. List details students should know.	1. Multiple choice test. 2. Criterion: four out of five details for each event. 3. Part II of test presents details of each event on list and asks pupils to order them in sequence. Score indicates closeness or correspondence to correct sequence. This same procedure could be used for entire set of major events. 4. Part III of test is oral explanation. Criterion: Students in class are able to paraphrase 90% of oral explanations given by others.

PLANNING CHART

Specific Objectives	Specific Activities	Evaluation Strategies
A = High School Biology students B = Will demonstrate an increased interest in biology by coming to class early. C = The teacher will leave the room open but will not ask students to come early nor provide special rewards for those who do. D = An average of 1/3 of the pupils will come early all year, and 80% will come early at least once. Domain = Affective Strategy = Motivation, interest, and valuing. Instructional Intent = Developmental	1. Divide text and other study materials into small segments, each with questions and exercises, each requiring less than 30 minutes to complete. 2. Arrange quest projects -- i.e., studying micro-organisms, growing cultures, photographing plant growth, raising rats, etc. 3. Completion of study segment enables students to work on one of the quest projects for remainder of the hour. 4. Announce room will be open early for further study or project work -- just for fun.	1. Announce that room will be available early. 2. Keep record (without telling students) of the number who come early. 3. If number increases, then this is basis for inferring increased interest.

APPENDIX A

ILLUSTRATIVE VERBS -- For Stating General Instructional Objectives*

analyze	create	listen	think
apply	demonstrate	locate	translate
appreciate	evaluate	perform	understand
comprehend	interpret	recognize	use
compute	know	speak	write

ILLUSTRATIVE VERBS -- For Stating Specific Learning Outcomes. The behavioral terms indicate how the student shows that he has learned. Note the variety possible.

"Creative" behaviors

alter	predict	reorganize	rewrite
ask	question	reorder	simplify
change	rearrange	rephrase	synthesize
design	recombine	restate	systematize
generalize	reconstruct	restructure	vary
modify	regroup	retell	write
paraphrase	rename	revive	

Complex, logical, judgmental behaviors

analyze	contrast	evaluate	infer
appraise	criticize	explain	plan
combine	decide	formulate	structure
compare	deduce	generate	substitute
conclude	defend	induce	

General discriminative behaviors

choose	differentiate	isolate	pick
collect	discriminate	list	place
define	distinguish	match	point
describe	identify	omit	select
detect	indicate	order	separate

Social behaviors

accept	compliment	forgive	participate
agree	contribute	greet	permit
aid	cooperate	help	react
allow	dance	interact	smile
answer	disagree	invite	talk
argue	discuss	join	thank
communicate	excuse	laugh	volunteer

*This list was adapted from one developed by C. K. Claus and presented at the annual meeting (Chicago, 1968) of the National Council on Measurement in Education. It is by no means a complete list of measurable learning behaviors but is intended to illustrate some of the possibilities and to demonstrate that behavioral terms can be used in all subject areas.

ILLUSTRATIVE VERBS -- For Stating Specific Learning Outcomes

Language outcomes/behaviors

abbreviate	hyphenate	recite	syllabify
accent	indent	say	tell
alphabetize	outline	sign	translate
articulate	print	speak	verbalize
call	pronounce	spell	whisper
capitalize	punctuate	state	write
edit	read	summarize	

Study behaviors

arrange	copy	locate	organize
categorize	diagram	look	quote
chart	find	map	record
cite	follow	mark	reproduce
circle	itemize	name	search
compile	label	note	sort
			underline

Music behaviors

accent	finger	pluck	strum
arrange	harmonize	practice	tap
blow	hum	rehearse	transpose
bow	listen	sing	whistle
clap	mute	speak	
compose	play	strike	

Physical behaviors

arch	jog	ski
bat	jump	skip
bend	kick	slide
carry	knock	somersault
catch	lift	sprint
chase	make	stand
climb	march	step
dive	overtake	stretch
face	pass	swim
float	pitch	swing
grab	pull	tiptoe
grasp	push	throw
grip	race	toss
hit	run	touch
hop	rush	vault
hurry	skate	walk

ILLUSTRATIVE VERBS -- For Stating Specific Learning Outcomes

Art behaviors

assemble	drill	paste	stick
blend	fold	pat	stir
brush	form	pour	trace
build	frame	press	trim
carve	hammer	roll	varnish
chissle	handle	rub	wax
color	heat	sand	wipe
construct	illustrate	saw	wrap
create	melt	sculpt	
cut	mix	shake	
dab	mold	sketch	
dot	nail	smooth	
draw	paint	stamp	

Drama behaviors

act	emit	move	respond
clasp	enter	pantomime	show
cross	exit	pass	sit
direct	express	perform	start
display	leave	proceed	turn
		recite	gesture

Mathematical behaviors

add	divide	interpolate	reduce
bisect	estimate	measure	solve
calculate	extrapolate	multiply	square
check	extract	convert	subtract
compute	graph	number	tabulate
count	group	plot	tally
derive	integrate	prove	verify

Laboratory science behaviors

apply	dissect	lengthen	reset
calibrate	estimate	limit	set
conduct	feed	manipulate	specify
connect	grow	operate	straighten
convert	increase	plant	time
decrease	insert	prepare	transfer
demonstrate	keep	remove	verify
		replace	weigh
		report	

ILLUSTRATIVE VERBS -- For Stating Specific Outcomes of Learning

Gneral appearance, health, and safety behaviors

button	drink	lace	unbutton
clean	eat	open	uncover
clear	eliminate	sleep	untie
close	empty	stop	unzip
comb	fasten	taste	wait
cover	fill	tie	wash
dress	go	smell	wear
			zip

Miscellaneous

aim	fit	pay	shut
attempt	fix	peel	signify
attend	flip	pin	slip
begin	get	position	slide
bring	give	present	spread
buy	grind	produce	stake
come	guide	propose	start
complete	hand	provide	stock
consider	hang	put	store
correct	hold	raise	strike
crease	hook	relate	suggest
crush	hunt	repeat	supply
designate	include	return	support
determine	inform	ride	switch
develop	lay	rip	take
discover	lead	save	tear
distribute	lend	scratch	touch
do	let	send	try
drop	light	serve	twist
end	make	sew	type
erase	mend	share	use
expand	miss	sharpen	vote
extend	offer	shoot	watch
feel	open	shorten	weave
finish	pack	shovel	work

APPENDIX B

ELEMENTS OF A DAILY LESSON PLAN

1. General Information

    a. Class:
    b. Course or Unit:
    c. Date:
    d. Lesson or Topic:

2. Objectives

    a. Audience:
    b. Observable pupil behavior:
    c. Conditions for learning:
    d. Criteria for acceptable performance:

3. Materials

    a. Teacher's
    b. Students'

4. Procedure

    a. Opening statements (motivation):
    b. Preparation or introduction:
    c. Key questions (watch sequence) and anticipated responses:
    d. Activities:
    e. Provision for individual differences:
    f. Summary or culmination:
    g. Assignment or lead for next lesson:

5. Evaluation

    a. Success in accomplishing the objectives:
    b. Analysis of the day's lesson:

        Strengths:
        Weaknesses:
        Suggestions for change:

A teacher is a self-correcting individual.

APPENDIX C

A GUIDE FOR EVALUATING LESSON PLANS -- QUESTIONS TO ASK

OBJECTIVES

Do the objectives reflect the students' skills, social capabilities, knowledge of processes?
Are the learning outcomes expected from the lesson clearly stated?
Are they appropriate and worthwhile outcomes, given the characteristics of the students to be taught?
Do the objectives identify the procedures to be used in obtaining evidence of outcomes achievement?

ADAPTING OBJECTIVES TO LEARNER CHARACTERISTICS

Are there provisions for modifying the objectives of the lesson to meet individual student characteristics?

SELECTING INSTRUCTIONAL MATERIALS AND PROCEDURES

Are the instructional materials appropriate to the learners and to the learning outcomes to be achieved?
Are the organizational and instructional procedures to be used in the lesson clearly identified?
Are they appropriate to the pupils to be taught and the learning outcomes to be achieved?
Have you identified what learning environment and activities will best help the students to achieve the objectives?
Is each learner aware of the desired acceptable achievement (terminal behavior)?

EVALUATION

Are there provisions for determining where pupils stand with respect to the desired learning outcomes of the lesson before it is presented?
Are there provisions for feedback to pupils about their performance during the time the lesson is being presented?
Are there provisions for testing the students' learning outcome after the lesson has been presented?

PLANNING NEXT STEPS

Is there some indication in the plan of what would be done next with the students if the learning outcomes expected from the lesson materialized?
Does the plan indicate what would happen next if pupils do not achieve the desired performance level after the lesson has been taught?

FINAL EVALUATION

Is there a reminder in your plan to evaluate the entire lesson and your performance, noting strengths and weaknesses as well as ideas for changes, mistakes to avoid?

Planning lessons is instructional decision-making.

APPENDIX D

UNIT PLANNING

H. C. Morrison in The Practice of Teaching in Secondary Schools says: "A learning unit is a comprehensive and significant part of an organized science, art, or conduct, which being learned results in an adaptation in personality (or 'behavior')." pp. 24-25.

A unit plan is similar to a lesson plan in that it has Goals (Objectives), Materials, Procedures and Methods, and Evaluation. Whereas daily lesson plans may only give the sense of a series of disconnected experiences, when these plans are organized into a logical unit they give the learner the feeling of continuity.

What follows is meant to be only a skeletal outline of things to consider while working up a unit.

I. Goals/Objectives

- A. Facts, concepts, and generalizations to be taught.
- B. Skills and techniques to be taught and reinforced.
  1. Communication skills
  2. Content area
  3. Social education: responsibility, openmindedness, cooperation, creativity, etc.
- C. Attitudes, interests, appreciations

II. Materials Needed and Available

- A. Resources for Teacher
  1. Resources on content, guides, and references
  2. Information on methods, projects, problems to be solved, bulletins
  3. Free materials
- B. Resources for Students
  1. AV aids: records, films, filmstrips, pictures, bulletin boards
  2. Books for information and enrichment
  3. Texts: various levels
  4. Magazines and reference books
  5. People and facilities: guests, interviews, field trips

III. Introduction to the Unit

- A. The Topic of the Unit
  1. Based on diagnosis, choose a unit of worthwhile content, related understandings and needs
  2. Develop the unit
  3. Specify purposes of the unit
  4. Provide for further resources and explorations of related problems after the unit has ended.
- B. Intiatory Activities: Approaches used by teacher and students

1. Motivating factors: instructional materials, films, literature, collections, resource personnel, field trips
2. Give approximate time for suggested activities

IV. Body of the Unit: Developmental Activities

A. Activities essential to acquire understandings, skills, and attitudes listed in the sequence in which learning will be facilitated
   1. Purposes for reading
   2. Special vocabulary needed
   3. Special reading skills needed
   4. Oral and written language activities
   5. Suggested topics for study by individuals or groups of students
   6. Related activities: creative dramatics, listening activities, art and construction work, musical activities, field trips, listening activities

B. Ways in which learning takes place
   1. Actual experiences
   2. Studying about: discussing, reading, writing
   3. Observation: direct and indirect--TV, film
   4. Testing

V. Conclusion of the Unit

A. Summary or group of activities to which all students can contribute and to which they direct their efforts in developing the unit
   1. Individual abilities and interests considered
   2. Activities: program, panel, drama, song, construction, dance

B. Approximate time required for activities: days of presentation

VI. Evaluation

A. Self-evaluation provided for students throughout the unit
B. Diagnosis of where students are when they begin the unit: level and readiness
C. Final evaluation of students in terms of growth in knowledge, skills, understandings, and attitudes and interests
D. Teacher evaluation of success of the unit.

A unit is not a method of instruction. It is a vehicle for organizing instruction of related materials, skills, interests and attitudes in such a way as to give unity to a variety of enriching and meaningful experiences to students.

APPENDIX E

SOURCES OF OBJECTIVES

"Directory of Measurable Objectives Sources (DIMOS): A National catalog of collections of measurable objectives. Classified by subject matter, grade level, domains, etc. Available from: Director of Research Education Commission of the States, 1860 Lincoln Street, Suite 822, Denver, Colorado 80203.

"Instructional Objectives: A National Compendium" A National catalog of programs using instructional objectives. Includes program descriptions in subject areas and teaching topics, available from: State of Florida, Department of Education, Tallahassee, Florida 32304.

"Instructional Objectives Exchange" A national exchange from which you may purchase sets of objectives and related evaluation items in forty curriculum areas; grades K-12. Catalog available from: IOX, Box 24095, Los Angeles, California 90024.

"Excerpts from Objectives for Instructional Programs" This chart is abstracted from OBJECTIVES FOR INSTRUCTIONAL PROGRAMS, a set of multi-media, in-service training materials. Available from: INSGROUP,Inc., One City Boulevard West, Orange, California 92668.

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Tyler, Ralph W. Basic Principles of Curriculum and Instruction. Chicago, Illinois: University of Chicago Press, 1950. A landmark document in the form of a class syllabus for a graduate course on curriculum development and instructional methodology. Describes a rationale for selecting and screening objectives as well as proposes a behavioral hierarchy for sequencing objectives.